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10/575,771	04/12/2006	Cornelis Johannes Adrianus Schetters	NL03 1227 US	3541

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EXAMINER	
BEHM, HARRY RAYMOND	
ART UNIT	PAPER NUMBER
2838	

NOTIFICATION DATE	DELIVERY MODE
02/10/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

Office Action Summary	Application No.	Applicant(s)	
	10/575,771	SCHETTERS, CORNELIS JOHANNES ADRIANUS	
	Examiner	Art Unit	
	HARRY BEHM	2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The finality of the last Office action, sent 11/21/08, is withdrawn due to the new grounds of rejection below. The period for reply has been reset and a new shortened statutory period shall take effect from the mailing date of this action.

Specification

Applicant traverses a change in title, but provides no reasoning for opposing a title change. MPEP 606.01 makes clear that the Examiner May Require a Change in Title. Where the title is not descriptive of the invention claimed, the examiner should require the substitution of a new title that is clearly indicative of the invention to which the claims are directed. This may result in slightly longer titles, but the loss in brevity of title will be more than offset by the gain in its informative value in indexing, classifying, searching, etc. If a satisfactory title is not supplied by the applicant, the examiner may, at the time of allowance, change the title by examiner's amendment. If the change in the title is the only change being made by the examiner at the time of allowance, and the application is maintained in paper, a separate examiner's amendment need not be prepared.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Power converter with a non-electrolytic capacitor and a single diode rectifier for a switched mode power supply.

Claim Objections

Claims 3-5 are objected to because of the following informalities: 'resister' on line 2 of claim 3 should be "resistor". Appropriate correction is required.

Response to Arguments

Applicant argues claims 13-16 should be allowed. However, no claim 16 has been received. Claims 13-15 have been treated below.

Applicant's arguments with respect to claim 1 have been considered but are largely moot in view of the new ground(s) of rejection. Since Applicant has requested further clarification regarding the combination of references, the arguments have been further addressed below.

Applicant's arguments filed 1/20/09, with respect to Kayser (US 6,295,212) have been fully considered but they are not persuasive. Applicant argues it would be illogical to modify capacitor C1 in Figure 2 and argues one of ordinary skill in the art would not be motivated to implement a non-electrolytic capacitor in series with diode D1. However, the use of electrolytic capacitor C1 does not prohibit the use of a non-electrolytic capacitor in parallel with electrolytic capacitor C1. It was well known at the time of the invention to implement a non-electrolytic capacitor in parallel with an electrolytic capacitor, since a non-electrolytic capacitor can be selected with a lower equivalent series resistance (ESR) and therefore can filter higher frequency components and the smaller non-electrolytic capacitor can be implemented to extend the life of the larger more expensive electrolytic capacitor. See for instance Fischer (DE 4205176A1 Figure 1 4 and 5) and Korcharz (US 6,049,471 Figure 6 172 and 174) which

teach implementing electrolytic and non-electrolytic capacitors in parallel as well as Saleh (US 4,353,114) and Hofmeister (US 7,068,942) which teach using non-electrolytic capacitors in π filters.

Applicant argues one would typically not experiment with the capacitive value of electrolytic capacitor C1. However, it was known to place a non-electrolytic capacitor in parallel with electrolytic capacitor C1 and one of ordinary skill in the art would have been skilled in selecting an optimal value for the non-electrolytic capacitance.

Applicant further argues one would not have been motivated to implement a π filter in the reference Kayser since the Kayser reference already has reduced EMI by implementing diode D1. However, while the Kayser reference has reduced EMI by implementing diode D1, the diode D1 has not eliminated EMI transmissions, so one of ordinary skill would be interested in further reducing EMI transmissions onto the voltage source. Furthermore, adding diode D1 does not block EMI receptions and only reduces EMI transmissions during a second time interval and does nothing to reduce EMI transmissions during a first time interval when the diode D1 is conducting. The π filter would reduce EMI transmissions and receptions during both time intervals and provides additional benefits such as holding up the DC input during low line conditions and large output current changes. Finally, the use of π filters were well known at the time of the invention, see for instance Balakrishan (US 6,813,168) "The simplest form of input EMI filter is known as a pi filter and is used in low-power power supplies to reduce power supply cost" (Balakrishnan column 1, lines 26-28).

Applicant argues that the non-electrolytic capacitor and the coil would not filter distortions caused by the switch mode power supply. However, the pi filter is bidirectional and inherently filters distortions caused by the power supply. As Saleh discloses the filter "prevents voltage ripple at the converter from being reflected back to the source" (Saleh column 3, lines 42-44).

Applicant argues one would not be motivated to implement a resistor in the pi filter. However, Balakrishnan (US 6,525,514) discloses a power converter which uses a resistor (Fig. 1 111) in a pi filter (Fig. 1 113,119).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Balakrishnan (US 5,285,369).

With respect to Claim 1, Balakrishnan discloses a power converter (Fig. 3 70), comprising an input circuit (Fig. 3 106-110) having a rectifier (Fig. 3 106) that is a single diode rectifier (Fig. 3 106) and a filter (Fig. 3 108 and 110) that includes a non-electrolytic capacitor (Fig. 3 110) connected in series with the rectifier (Fig. 3 106), the filter providing a DC voltage output (Fig. 3 Vbias); and a switched mode power supply IC (Fig. 3 82) arranged to receive the DC voltage (Fig. 3 Vbias) output from the filter (Fig. 3 108,110).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Balakrishnan (US 5,285,369) in view of Mardiguian ("Controlling Radiated Emissions by Design").

With respect to Claim 2, Balakrishnan discloses the power converter as claimed in claim 1, and is silent as to the capacitive value of capacitor 110. Mardiguian teaches how to select the capacitance value for an ideal decoupling capacitor. It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the capacitance of capacitor 110 as about 100nF. The reason for doing so was "This capacitor and its associated conductors play an important role in radiation from PCB. The so called decoupling capacitor can be regarded as a reservoir to provide the inrush current that the logic device needs to switch in the specified time… The value of the decoupling capacitor, C, close to the logic elements (chips) requiring the switching current, I, is C = I/dV/dt" (Mardiguian pages 78-80). Furthemore, 100nF was a known value for a decoupling capacitor at the time of the invention and one of ordinary skill in the art would have been able to select a capacitance of a decoupling capacitor.

See MPEP 2144.05 II. OPTIMIZATION OF RANGES

A. Optimization Within Prior Art Conditions or Through Routine Experimentation Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.); see also Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969) (Claimed elastomeric polyurethanes which fell within the broad scope of the references were held to be unpatentable thereover because, among other reasons, there was no evidence of the criticality of the claimed ranges of molecular weight or molar proportions.). For more recent cases applying this principle, see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

Claims 1 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayser (US 6,295,212) in view of Saleh (US 4,353,114).

With respect to Claim 1, Kayser discloses a power converter, comprising: an input circuit having a rectifier that is a single diode rectifier (Fig. 2 D1) and a filter (Fig. 2 C1) connected in series with the rectifier, the filter providing a DC voltage output; and a switched mode power supply IC (Fig. 2 20) arranged to receive the DC voltage output from the filter. Kayser does not disclose in Figure 2 wherein the filter comprises a non-electrolytic capacitor. Saleh teaches a converter with a π filter (Fig. 1A C41,C42,C45,C46 and L1) with non-electrolytic capacitors (Fig. 1A C41,C46). It would have been obvious to one of ordinary skill in the art at the time of the invention to implement a filter with non-electrolytic capacitors after diode D1. The reason for doing so was "This filter assures a relatively steady voltage at the converter and prevents voltage ripple at the converter from being reflected back to the source" (Saleh column 3, lines 39-44).

With respect to Claim 7, Kayser in view of Saleh disclose a power converter as set forth above, wherein the DC voltage output of the filter is applied to a series connection of a primary winding (Fig. 2 Lp) and the switched mode power supply IC (Fig. 2 20). Kayser does not disclose a current sensing resistor in Figure 2, however, Kasyer discloses a current sensing resistor (Fig. 1 R1) in Figure 1. It would have been obvious to one of ordinary skill in the art at the time of the invention to implement a current sensing resistor. The reason for doing so was to sense the primary current to

control and limit the primary current as was well known in the art and taught by Kayser ("Ipk produces a voltage across the resistor R2 which causes the control circuit to turn off the FET Q6", Kayser column 2, lines 49-51).

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kayser (US 6,295,212) in view of Saleh (US 4,353,114) and further in view of Hofmeister (US 7,068,942).

With respect to Claim 2, Kayser in view of Saleh disclose the converter as set forth above, and remain silent as to the capacitance of capacitors C41 and C46. However, it was well known at the time of the invention how to size a filtering capacitor and Hofmeister teaches using a 100nF capacitor (Fig. 2 0.1uf) in a pi filter (Fig. 2 270). It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the capacitance of capacitor C1 as about 100nF. The reason for doing so was the capacitance of 100nF was a commonly used filtering capacitance value and one of ordinary skill in the art would have been able to size a filtering capacitor.

See MPEP 2144.05 II. OPTIMIZATION OF RANGES

A. Optimization Within Prior Art Conditions or Through Routine Experimentation Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges

by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.); see also Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969) (Claimed elastomeric polyurethanes which fell within the broad scope of the references were held to be unpatentable thereover because, among other reasons, there was no evidence of the criticality of the claimed ranges of molecular weight or molar proportions.). For more recent cases applying this principle, see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

Claims 3, 5-6 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayser (US 6,295,212) in view of Saleh (US 4,353,114) and further in view of Balakrishnan (US 6,525,514).

With respect to Claim 3, Kayser in view of Saleh disclose the power converter as set forth above wherein the filter connected to a single diode rectifier (Kayser Fig. 2 D1)

includes a non-electrolytic capacitor (Saleh Fig. 1A C41), coil (Fig. 1A L1) and electrolytic capacitor (Fig. 1A C46). Kayser in view of Saleh remain silent as to the need for an inrush resistor. Balakrishnan discloses a power converter which implements an inrush resistor (Fig. 1 111) in a pi filter (Fig. 1 113,119). It would have been obvious to one of ordinary skill in the art at the time of the invention to implement a resistor between the non-electrolytic and electrolytic capacitors and in parallel with a coil (Balakrishnan Fig. 1 119). The reason for doing so was to low pass filter noise and limit inrush current as disclosed by Balakrishnan in Figure 1.

With respect to Claim 5, Kayser in view of Saleh disclose the power converter as set forth above wherein the coil and non-electrolytic are arranged to low pass filter distortions caused by the switched mode power supply IC.

With respect to Claims 6 and 14-15, Kayser in view of Saleh disclose the power converter as set forth above. See Claim 3 for additional details.

Claims 4, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayser (US 6,295,212) in view of Saleh (US 4,353,114), Balakrishnan (US 6,525,514) and further in view of Hofmeister (US 7,068,942).

With respect to Claim 4, Kayser in view of Saleh and Balakrishnan disclose the converter as set forth above, and remain silent as to the capacitance of capacitor C45. However, it was well known at the time of the invention how to size a filtering capacitor

and Hofmeister teaches using a 22μF capacitor (Fig. 2 22uf) in a pi filter (Fig. 2 270). It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the capacitance of capacitor C5 as about 10μF. The reason for doing so was the capacitance was a commonly used filtering capacitance value and one of ordinary skill in the art would have been able to size a filtering capacitor. See MPEP 2144.05 II. OPTIMIZATION OF RANGES A. Optimization Within Prior Art Conditions or Through Routine Experimentation.

With respect to Claims 12 and 13, Kayser in view of Saleh, Balakrishnan and Hofmeister disclose the power converter as set forth above. See claims 1-2 and 4 for additional details.

Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayser (US 6,295,212) in view of Saleh (US 4,353,114) and further in view of the TEA152x family data sheet by Philips.

With respect to Claim 8, Kayser in view Saleh disclose a power converter as set forth above and do not disclose the gain of the feedback loop. It would have been obvious to one of ordinary skill in the art at the time of the invention to power the Philips IC TEA1520P with the half wave rectifier and pi filter. The reason for doing so was the TEA1520P "is a Switched Mode Power Supply (SMPS) controller IC that operates directly from the rectified universal mains. It is implemented in the high voltage EZ-HV SOI process, combined with a low voltage BICMOS process. The device includes a high

voltage power switch and a circuit for start-up directly from the rectified mains voltage" (TEA 152x family data sheet page 2).

With respect to Claim 9, Kayser in view Saleh and the TEA152x Datasheet disclose a power converter as set forth above wherein the high gain feedback loop includes a multiplier arranged to diminish ripple caused by the non- electrolytic capacitor.

With respect to Claim 10, Kayser in view of Saleh and the TEA152x Datasheet disclose a power converter as set forth above wherein the multiplier is a factor 10 multiplier.

With respect to Claim 11, Kayser in view of Saleh and the TEA152x Datasheet sheet disclose a power converter as set forth above, wherein the switched mode power supply IC (Fig. 2 20) includes an internal start-up circuit having a high-voltage start-up current source and without provision of any dissipative bleeder resistor [inrush resistor external to IC].

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HARRY BEHM whose telephone number is (571)272-8929. The examiner can normally be reached on 7:00 am - 3:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm E. Ullah can be reached on (571) 272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Akm Enayet Ullah/
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